Remarks:

Reconsideration of the application is respectfully requested.

Applicant gratefully acknowledges the suggestions made by the Examiner in the Advisory Action mailed July 31, 2007 (the **"Advisory Action"**) for getting the claims in condition for allowance. Applicant has amended claims 1 and 11, herein, to address the suggestions made in the **Advisory Action**. Additionally, since the amendments made to claims 24 and 26 in the prior Response were not entered, they are being re-presented, herein.

Claims 1 - 6 and 10 - 26 are presently pending in the application. Claims 1, 13, 24 and 26 have been amended. Claims 7 - 9 were previously canceled.

In item 2 of the final Office Action mailed May 9, 2007 (the **final Office Action"**), the specification was objected to because certain claims had been amended to recite a state unit "includes an electrical **capacitor**". Applicant has amended claims 1 and 13 to recite that the state unit includes, among other things, "an electrical **capacitance**". The amendment to recite such an electrical capacitance is supported by the specification of the instant application, for example, on page 8 of the instant application, which states, in part:

Fig. 2 shows a schematic representation of a first embodiment of the present invention. This embodiment follows the approach of storing electrical energy in a capacitor. **The state unit comprises a capacitor, <u>or a unit 30 with an electrical capacitance</u>,** and a clock generator 32 which are actively connected to each other and to the computation unit 12. In an initial state the unit 30 with an electrical capacitance carries no charge. When an operation is performed by the computation unit 12 the electrical capacitance 30 is charged up under the control of a switching event of a FET. By using this capacitor as the frequency control element of an oscillator or PLL divider which serves as the clock for the circuit element, i.e. the crypto-processor or crypto-coprocessor, the coupling with the operating speed can be achieved simply. [emphasis added by Applicant]

As shown above, the specification provides proper support for the "electrical capacitance" of current claims 1 and 13. As such, it is respectfully requested that the objection to the specification on page 2 of the **final Office Action** be withdrawn.

Additionally in item 2 of the **final Office Action,** claim 26 was objected to for reciting a "calculation unit", instead of a "computation unit". Both of claims 24 and 26 have been amended herein to replace the recited "calculation unit" with a "computation unit", as suggested on page 2 of the **final Office Action.**

As such, Applicant's specification and claims are believed to overcome the objections made on page 2 of the **final Office Action.**

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In item 3 of the **final Office Action**, claims 1 - 6 and 10 - 14

were rejected under 35 U.S.C. § 112, first paragraph,

allegedly, for the same objection as was made to the

specification in item 2 of the **final Office Action**. As such,

Applicant believes that the amendments to claims 1 and 13 also

address the rejection of claims 1 - 6 and 10 - 14, made in

item 3 of the **final Office Action**.

Applicant notes that the Advisory Action indicated, in part:

> However, if the applicant amends the independent
> claims to recite the subject matter that is discloses
> [sic] in paragraph [0025] of the instant
> specification, the claims would overcome 35 USC 112
> rejection.

Paragraph [0025] of the instant application, states:

> **The arrow 34 represents the charging of the electrical
> capacitance 30 initiated by execution of an operation
> in the computation unit 12.** Each time an operation is
> executed by the computation unit 12, the charge on the
> electrical capacitance 30 is increased by a specified
> amount. The charge contained in the electrical
> capacitance 30 is thus a direct measure of the number
> of operations executed by the computation unit 12.
> Depending on the size of this charge, a frequency of a
> clock generation by the clock generator 32 for the
> computation unit 12 is so controlled (arrow 36) that
> the greater the charge of the electrical capacitance
> 30 is, the lower is the frequency of the clock
> generation. Since the clock generated by the clock
> generator 32, or its frequency, directly influences
> the speed of execution of an operation by the
> computation unit 12 (arrow 38), this means that the
> speed of execution of an operation by the computation
> unit 12 gets slower and slower as the number of

operations performed by the computation unit 12
increases. [emphasis added by Applicant]

As stated above, Applicant has amended claims 1 and 13 to
recite that the state unit includes, among other things, "an
electrical **capacitance**". As such, paragraph [0025] of the
instant application further supports the amendments to claims
1 and 13.

As such, Applicant's amended claims are believed to meet the
requirements of 35 U.S.C. § 112, first paragraph.

In item 5 of the **final Office Action**, claims 1 - 6 and 10 - 26
were rejected on the ground of nonstatutory obviousness-type
double patenting. However, Applicant gratefully acknowledges
that the **Advisory Action** indicated, in part:

> Examiner further directs applicant's attention with
> respect to Double patenting rejections **which has been
> withdrawn**. [emphasis added by Applicant]

As such, in view of the arguments made in the response filed
on July 9, 2007 (the "**prior response**"), that response being
incorporated herein, by reference, in its entirety, and in
view of the statement made in the **Advisory Action** indicating
that the Double Patenting rejection was **withdrawn**, Applicant
believes that the claims of the instant application are

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patently distinct from the claims of U. S. Patent No.

6,999,333.

In item 6 of the **final Office Action**, claims 1 - 6 and 10 - 26

were rejected under 35 U.S.C. § 102(e) as allegedly being

anticipated by U. S. Patent No. 6,330,668 to Curiger et al

("**CURIGER**")

Applicant respectfully traverses the above-rejections.

I.   **The CURIGER reference fails to teach or suggest, among
        other limitations of Applicant's claims, charging of an
        electrical capacitance being initiated by an execution of
        an operation in the computation unit and a variable that
        is a charge quantity of said electrical capacitance, as
        required by Applicant's claims 1 and 13.**

The Advisory Action indicated, in part:

> However, if the applicant would amend the claims to
> recite " . . . a variable, wherein the variable is a
> charge quantity" and with the amendedment [sic] that
> is already suggested above, **the amended claims will
> overcome cited prior art rejection as well.** [emphasis
> added by Applicant]

As stated above, paragraph [0025] of the instant application,

states:

> **The arrow 34 represents the charging of <u>the electrical
> capacitance 30</u> initiated by execution of an operation
> in the computation unit 12.** Each time an operation is
> executed by the computation unit 12, the charge on the
> electrical capacitance 30 is increased by a specified
> amount. The charge contained in the electrical

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capacitance 30 is thus a direct measure of the number
of operations executed by the computation unit 12.
Depending on the size of this charge, a frequency of a
clock generation by the clock generator 32 for the
computation unit 12 is so controlled (arrow 36) that
the greater the charge of the electrical capacitance
30 is, the lower is the frequency of the clock
generation. Since the clock generated by the clock
generator 32, or its frequency, directly influences
the speed of execution of an operation by the
computation unit 12 (arrow 38), this means that the
speed of execution of an operation by the computation
unit 12 gets slower and slower as the number of
operations performed by the computation unit 12
increases. [emphasis added by Applicant]

As such, Applicant has amended claim 1 of the instant

application to recite, among other limitations:

>   wherein said state unit includes an electrical
>   capacitance and **said variable is a charge quantity** of
>   **said electrical capacitance;** and
>
>   **a charging of said electrical capacitance being
>   initiated by an execution of an operation in the
>   computation unit.** [emphasis added by Applicant]

Similarly, Applicant's independent claim 13 was amended to

recite, among other limitations:

>   wherein **the variable is a charge quantity** of an
>   **electrical capacitance;** and
>
>   **wherein the charging of the electrical capacitance is
>   initiated by an execution of an operation in the
>   computation unit.** [emphasis added by Applicant]

In addition to paragraph [0025] of the instant application,

the further amendments to claims 1 and 13 are supported by the

specification of the instant application. For example, it is

clear from the description of Fig. 2 of the instant

application, that **variable the charge quantity of the**

electrical capacitance is the variable recited in original

independent claims 1 and 13. See, for example, paragraph

[0025] of the present application, which states, in part:

> The **charge contained in the electrical capacitance** 30
> is thus **a direct measure** of the number of operations
> **executed** by the computation unit 12. **Depending on the**
> **size of this charge**, a frequency of a clock generation
> by the clock generator 32 for the computation unit 12
> is so controlled (arrow 36) that the greater the
> charge of the electrical capacitance 30 is, the lower
> is the frequency of the clock generation. [emphasis
> added by Applicant]

As such, it is believed that no new matter was added by way of

the above amendments to claims 1 and 13.

It is further believed that the **CURIGER** reference, cited in

the **final Office Action**, does not teach or suggest the above

limitations of Applicant's claims 1 and 13, among others.

See, for example, the arguments set forth in the **prior**

Response. Applicant's belief is supported by the indication

in the **Advisory Action** that the amended claims would be

patentable over the cited prior art if the above amendments

were made.

As such, Applicant's claims 1 - 6 and 10 - 14 are believed to

be patentable over the **CURIGER** reference.

   II. The CURIGER reference fails to teach or suggest,
    among other limitations of Applicant's claims, a
    thermal capacitance having a second temperature,
    wherein the speed of the computation unit is also
    controlled according to the second temperature, as
    ~~required by Applicant's claim 15.~~

Applicant's independent claim 15 recites, among other

limitations:

> a state unit, which has a state, **wherein the speed of
> the computation unit is controllable according to the
> state of the state unit**, **wherein the state unit is
> designed to cause an increase of a variable by which
> the state of the state unit can be represented in
> response to the execution of an operation by the
> computation unit,** and to decrease the speed of the
> computation unit in response to the increase of the
> variable due to executing of the operation,
>
> wherein the state unit includes a unit with a thermal
> capacitance;
>
> **wherein the state is a temperature of the unit;**
>
> **wherein the unit with a thermal capacitance also has a
> second temperature;** and
>
> **wherein the speed of the computation unit is also
> controlled according to the second temperature.**
> [emphasis added by Applicant]

The Office Action stated that the above limitations of

Applicant's claim 15 are allegedly disclosed in col. 4 of

CURIGER, lines 15 – col. 5, line 55.

Applicant respectfully disagrees.

Applicant's independent claim 15 recites, among other limitations, that **the speed of the computation unit is controllable according to the <u>state</u> of the state unit, the state unit is designed to cause an increase of a variable by which the <u>state of the state unit can be represented</u> in response to the execution of an operation by the computation unit, and the <u>state is a temperature of the unit</u>**. Additionally, Applicant's claim 15 recites, among other limitations, that the state unit includes **a unit with a thermal capacitance having a <u>second</u> temperature, <u>wherein the speed of the computation unit is also controlled according to the second temperature</u>**.

As such, Applicant's claim 15 requires, among other things, that **the state unit have <u>two</u> separate temperatures that control the speed of the computation unit.**

However, in **CURIGER** , the oscillator of **CURIGER**, as well as the rest of the circuitry, should have **the <u>same</u> temperature**, such that the temperature impact on the oscillator is the same as the temperature impact on the rest of the circuitry. See, for example, col. 4 of **CURIGER** , lines 58 – 60). Based on this understanding, a person of ordinary skill in this art would understand it to be desirable, for the circuit of **CURIGER**, to maintain the oscillator and the rest of the circuits **at the**

same temperature. Thus, among other limitations of

Applicant's claims, CURIGER fails to teach, suggest or

motivate to a person of skill in the art, Applicant's

invention of claim 15, of providing two different temperatures

that control the speed of the computation unit.

As such, Applicant's independent claim 15 is believed to be

patentable over the CURIGER reference.

III. The CURIGER reference fails to teach or suggest, among
other limitations of Applicant's claims, an electrical
filament resistor, as required by Applicant's claim 20.

Applicant's independent claim 20 recites, among other

limitations:

> wherein the processor comprises an electrical filament
> resistor adapted to supply energy to the thermal
> capacitance in response to the execution of an
> operation in the computation unit.

The use of such an electrical filament resistor is supported

by the specification of the instant application, for example,

page 10 of the instant application, which states, in part:

> In response to execution of an operation in the
> computation unit 12, energy is supplied to the thermal
> capacitance 50 (arrow 54), thus raising its
> temperature. This can be achieved by using an
> electrical filament resistor, preferably however
> through the waste heat of the computation unit 12

conveyed over a heat conducting connection. [emphasis added by Applicant]

However, item 6 of the Office Action, which rejects claim 20 over **CURIGER**, fails to even mention an electrical filament resistor, or where such an electrical filament resistor could, allegedly, be found in **CURIGER**. Applicant maintains that the **CURIGER** reference neither teaches, nor suggests, among other limitations of Applicant's claims, a processor <u>**including an electrical filament resistor** adapted to supply energy to the thermal capacitance in response to the execution of an operation</u> in the computation unit.

Further, **CURIGER** describes that the circuit is implemented in a CMOS silicon technology. See, for example, col. 4 of **CURIGER**, lines 56 - 60). It is well known that resistors are avoided in CMOS technology. Consequently, a person of ordinary skill in this art would, naturally, <u>not</u> include a filament resistor in the circuit of **CURIGER**.

Moreover, according to **CURIGER**, the heating of the circuit would be undesirable. Thus, a person of ordinary skill in the art, reading **CURIGER**, would, naturally, not use an electrical filament resistor in combination with the circuit of **CURIGER**. According to **CURIGER**, the heating of the silicon is an undesirable effect. In **CURIGER** , the oscillator of **CURIGER** ,

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as well as the rest of the circuitry, should have the same

temperature, such that the temperature impact on the

oscillator is the same as the temperature impact on the rest

of the circuitry. See, for example, col. 4 of **CURIGER** , lines

58 - 60). Based on this understanding, a person of ordinary

skill in this art would understand it to be desirable, for the

circuit of **CURIGER**, to maintain the oscillator and the rest of

the circuits **at the same temperature**, which understanding

would prevent a person of ordinary skill in this art from

providing an electrical filament resistor, as required by

Applicant's claim 20.

For the foregoing reasons, among others, Applicant's claim 20

is additionally believed to be patentable over the **CURIGER**

reference.

IV.   **The CURIGER reference fails to teach or suggest, among
       other limitations of Applicant's claims, an inversely
       proportional relationship between the speed of the
       computation unit and the variable representing the state
       of the state unit, and an output signal of a temperature
       sensor controlling the clock rate of a clock generator,
       as required by Applicant's claim 21.**

Applicant's independent claim 21 recites, among other

limitations:

       a state unit, which has a state, wherein the speed of
       the computation unit is controllable according to the
       state of the state unit, wherein the state unit is

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designed to cause **an increase of a variable by which the state of the state unit can be represented in response to the execution of an operation** by the computation unit, **and to decrease the speed of the computation unit in response to the increase of the variable due to executing of the operation;** and

. . .

wherein the state is a temperature of the unit;

wherein the clock generator is adapted such that **an output signal of the temperature sensor controls a clock rate** generated by the clock generator;
[emphasis added by Applicant]

As fully discussed in the sections, above, **CURIGER** fails to teach or suggest, among other limitations of Applicant's claims, **an inversely proportional relationship between the speed of the computation unit and the variable, by which the state of the state unit can be represented, or an inversely exponential relationship between the speed of the computation unit and the variable, by which the state of the state unit can be represented.**

Further, **CURIGER** fails to teach or suggest, among other limitations of Applicant's claims, **a temperature sensor or a clock generator adapted such that an output signal of the temperature sensor controls a clock rate generated by the clock generator, as required by Applicant's claim 21.** Rather, in **CURIGER**, the ring oscillator **has a <u>natural</u> temperature dependence,** caused by the temperature dependent

characteristics **of the field effect transistors** disclosed in

CURIGER. As such, among other limitations of Applicant's

claims, **CURIGER** fails to teach or suggest Applicant's

particularly claimed temperature sensor of claim 1. Nor does

item 6 of the Office Action, which rejects claim 21 over

CURIGER, even mention such a temperature sensor, as claimed in

Applicant's claim 21.

For the foregoing reasons, among others, Applicant's claim 21

is additionally believed to be patentable over the **CURIGER**

reference.

V. **The CURIGER reference fails to teach or suggest, among
other limitations of Applicant's claims, an inversely
proportional relationship between the speed of the
computation unit and the variable representing the state
of the state unit or wherein the state unit is so
designed that the speed of the computation unit is
inversely exponential to the variable, by which the state
of the state unit can be represented, as required by
Applicant's claim 22.**

Applicant's independent claim 22 recites, among other

limitations:

> wherein the state unit is so designed that **the speed
> of the computation unit is inversely proportional to
> the variable,** by which the state of the state unit can
> be represented, **or**

> wherein the state unit is so designed that **the speed
> of the computation unit is inversely exponential to**

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> **the variable**, by which the state of the state unit can be represented [emphasis added by Applicant]

As discussed in the sections above, **CURIGER** fails to teach or suggest, among other limitations of Applicant's claims, a state unit, which is so designed that the speed of the computation unit is inversely proportional to the variable, by which the state of the state unit can be represented, or wherein the state unit is so designed that the speed of the computation unit is inversely exponential to the variable, by which the state of the state unit can be represented.

For the foregoing reasons, among others, Applicant's claim 22 is additionally believed to be patentable over the **CURIGER** reference.

VI.   The CURIGER reference fails to teach or suggest, among other limitations of Applicant's claims, the presence of a clock generator adapted to change the speed of the computation unit in steps in dependence on the state of the state unit, as required by Applicant's claim 23.

Applicant's independent claim 23 recites, among other limitations:

> wherein **the clock generator is adapted to change the speed of the computation unit in steps in dependence on the state of the state unit**, to set the speed of the computation unit to a first high speed or to a second lower speed. [emphasis added by Applicant]

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As discussed in the sections above, **CURIGER** fails to teach or suggest, among other limitations of Applicant's claims, a state unit, which is adapted to change the speed of the computation unit **in steps**, in dependence on the state of the state unit, to set the speed of the computation unit to a first high speed or to a second lower speed.

More particularly, item 6 of the Office Action does not even allege that that **CURIGER** discloses a clock generator, **wherein the clock generator is adapted to change the speed of the computation unit in steps, in dependence on the state of the state unit**, as required by Applicant's claim 23. In fact, **CURIGER** discloses a ring oscillator, which is affected **in a continuous way** by the temperature. In **CURIGER**, this continuous impact is caused by the natural characteristic of the field effect transistor, described herein above. In contrast to the teachings of **CURIGER**, Applicant's independent claim 23 recites, among other limitations, **a step-wise change of the speed**, which is contrary to the teachings of **CURIGER**.

For the foregoing reasons, among others, Applicant's claim 23 is additionally believed to be patentable over the **CURIGER** reference.

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VII. The CURIGER reference fails to teach or suggest, among
other limitations of Applicant's claims, setting a factor
for a relationship between a state of the state unit and
the speed of the calculation unit or for setting an
amount of energy supplied to the state unit by means of a
programmable parameter, as required by Applicant's claim
24.

Applicant's independent claim 24 recites, among other

limitations:

> wherein the processor is adapted to allow for **setting
> a factor for a relationship between a state of the
> state unit and a speed of the computation unit or for
> setting an amount of energy supplied to the state unit
> by means of a programmable parameter** [emphasis added
> by Applicant]

Item 6 of the Office Action fails to even allege that **CURIGER**

teaches or suggests, among other limitations of Applicant's

claims, a circuit, wherein the processor is adapted to allow

for setting a factor for a relationship between a state of the

state unit and the speed of the calculation unit, or for

setting an amount of energy supplied to the state unit by

means of a programmable parameter, as required by Applicant's

claim 24. In fact, **CURIGER** specifically teaches that the

oscillator and the rest of the circuit should be heated in the

same way. Thus, **no means** for setting a factor for a

relationship between a state of the state unit and the speed

of the calculation unit, would make any sense with respect to

the disclosure of **CURIGER**. This is due to the fact that

according to **CURIGER, the speed of the oscillator should**

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change in the same way as the speed of the rest of the

circuit, in order to avoid the oscillator operating faster

than the rest of the circuit of **CURIGER.** As such, **CURIGER,**

fails to teach or suggest, among other limitations of

Applicant's claims, a processor adapted to allow for setting a

factor for a relationship between a state of the state unit

and the speed of the calculation unit, or for setting an

amount of energy supplied to the state unit by means of a

programmable parameter, as required by Applicant's claim 24.

For the foregoing reasons, among others, Applicant's claim 24

is additionally believed to be patentable over the **CURIGER**

reference.

VIII. The **CURIGER** reference fails to teach or suggest, among
      other limitations of Applicant's claims, controlling a
      number of bits processed simultaneously, by an operation
      in the computation unit according to the state of the
      state unit, as required by Applicant's claim 25.

Applicant's independent claim 25 recites, among other

limitations:

> wherein **a number of bits which are processed**
> **simultaneously** by an operation in the computation unit
> **is controlled according to the state of the state**
> **unit.** [emphasis added by Applicant]

Item 6 of the Office Action fails to even allege that **CURIGER**

teaches or suggests, among other limitations of Applicant's

claims, controlling a number of bits processed simultaneously, by an operation in the computation unit according to the state of the state unit, as required by Applicant's claim 25. In fact, **CURIGER** fails to teach or suggest such a feature. Instead, **CURIGER** tries to synchronize the speed of the oscillator and the speed of the computation unit, **but does not teach influencing the speed of the computation unit by setting the numbers of bits which are processed simultaneously.**

For the foregoing reasons, among others, Applicant's claim 25 is additionally believed to be patentable over the **CURIGER** reference.

IX. The CURIGER reference fails to teach or suggest, among other limitations of Applicant's claims, the introduction of wait clock intervals to decrease the speed of the computation unit, as required by Applicant's claim 26.

Applicant's independent claim 26 recites, among other limitations:

> a state unit, which has a state, wherein the speed of the computation unit is controllable according to the state of the state unit, wherein the state unit is designed to cause an increase of a variable by which the state of the state unit can be represented in response to the execution of an operation by the computation unit, and to decrease the speed of the computation unit in response to the increase of the variable due to executing of the operation,

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> wherein <u>wait clock intervals</u> are introduced <u>to</u>
> <u>decrease the speed</u> of the computation unit. [emphasis
> added by Applicant]

Item 6 of the Office Action fails to even allege that **CURIGER**
teaches or suggests, among other limitations of Applicant's
claims, **the introduction of wait clock intervals to decrease
the speed of the computation unit**, as required by Applicant's
claim 26. In fact, **CURIGER** neither teaches, nor suggests such
a limitation, as **CURIGER** intends that the speed of the
oscillator be synchronized with the speed of the computation
unit.

For the foregoing reasons, among others, Applicant's claim 26
is additionally believed to be patentable over the **CURIGER**
reference.

X.   Conclusion.

It is accordingly believed that none of the references,
whether taken alone or in any combination, teach or suggest
the features of claims 1, 13, 15 and 20 - 26. Claims 1, 13,
15 and 20 - 26 are, therefore, believed to be patentable over
the art. The dependent claims are believed to be patentable
as well because they all are ultimately dependent on claims 1
and 15.

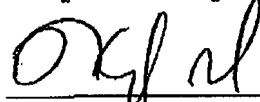**RECEIVED**
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In view of the foregoing, reconsideration and allowance of

claims 1 - 6 and 10 - 26 are solicited.

In the event the Examiner should still find any of the claims

to be unpatentable, counsel would appreciate receiving a

telephone call so that, if possible, patentable language can

be worked out. In the alternative, the entry of the amendment

is requested, as it is believed to place the application in

better condition for appeal, without requiring extension of

the field of search.

If an extension of time for this paper is required, petition

for extension is herewith made.

Please charge any fees that might be due with respect to

Sections 1.16 and 1.17 to the Deposit Account of Lerner

Greenberg Stemer LLP, No. 12-1099.

Respectfully submitted,

Kerry P. Sisselman
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_____
For Applicant

August 8, 2007

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